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ABSTRACT

A longitudinal study of elementary schools formally implementing the Multiunit School model collected data suggesting that teachers' feelings of autonomy and job satisfaction are less closely associated with teacher participation on faculty teams for the management of instruction and school administration than with the presence or absence of dominance by school administrators. Data were gathered every 6 months from 14 schools, from the spring before they implemented the multiunit model through the completion of their second year using the model. Parallel data were gathered from 13 nonimplementing schools, primarily from the same districts. Questionnaires and interviews were used to collect information on the organization of instruction, the governance of decision-making, task-related communication among staff members, and staff work attitudes. This report describes the schools, faculty characteristics (including turnover), the measures used, the methods of data analysis, the evolution of school governance and staff interaction patterns in the schools observed, and the findings relative to the attitudinal effects of the changes studied. Four pages of references are provided. (PGD)

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Change in the Governance of the School's Instructional Program: A Study of Multiunit Elementary Schools

by
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February 1986

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Chapter One

Introduction

Studies of "effective schools" have brought into focus issues regarding the principal's role in school improvement or, more generally, the linkage between the school's managerial and technical systems. These studies have pointed repeatedly, if not altogether convincingly, to the impact of school leadership, decision-making arrangements, and "climate" on student achievement (Purkey & Smith, 1982); and, similarly, research on the implementation of innovations has stressed the pivotal role of school management in effecting instructional change (Berman & McLaughlin, 1978; Gaynor, 1977; Herriott & Gross, 1979). The recent research, however, collides with other traditions of inquiry that emphasize the "loose coupling" between managerial processes of American schools and the instructional practices of teachers. Scholars have long noted the dilemma of leadership inherent in organizations in which the central work of the organization depends on the creativity or independent judgment of professionals, a condition that applies with especial force to education (Becker, 1953; Bidwell, 1965; Bridges, 1970; Charters, 1964; Corwin, 1965; Dornbusch & Scott, 1975; Hanson, 1975; Kerr, 1977; Lortie, 1969, 1975; March, 1978; Martin & Willower, 1981; Meyer & Rowan, 1977; Pellegrin, 1976; Trask, 1964; Weick, 1976). If the actions of school administrators do, indeed, have a discernible impact on student achievement, as some contend, it is far from clear how the effects come about. The means by which school improvement efforts are transformed into specific pedagogical practices or other conditions that directly impinge on cognitive learning are matters more of conjecture than of dependable knowledge (Barr & Dreeben, 1977; Boyan, 1982).

Findings of our longitudinal study of a number of elementary schools implementing the Individually Guided Education/Multiunit School model

(IGE/MUS), conducted at the zenith of the model's popularity in the mid-1970s by the University of Oregon's Center for Educational Policy and Management, bear on questions of change in the structure of decision making and in the conduct of instruction (Packard, Charters, & Duckworth, 1978). In the present report we will focus on one facet of our study, which sought to document such changes and to trace their consequences for teacher sentiments toward their work--feelings of autonomy and job satisfaction, in particular. In doing so, we will draw on a number of analyses we have conducted since the earlier report.

IGE/MUS schools offer a propitious setting in which to investigate changes in decision-making structures and instructional arrangements. The IGE/MUS plan was initially developed by the Wisconsin Research and Development Center for Cognitive Learning (Klausmeier, Rossmiller, & Saily, 1977) and was being actively disseminated at the time of our study in several hundred elementary schools around the United States. The Wisconsin plan featured both a curricular and managerial component--IGE and MUS, respectively. The first called for the use of individually tailored diagnostic-prescriptive teaching practices in classrooms, supported by relevant curriculum materials and evaluation devices. The second entailed the formation of the teaching faculty into teams, or "units," responsible for the instructional program of their respective students. Units were to have formally designated leaders chosen from the membership, and the leaders would form a faculty cabinet (the "Instructional Improvement Council") to coordinate interunit affairs and advise the principal on wider affairs of the school. The altered managerial structure was viewed as a means for administrators and curriculum specialists to work collaboratively with faculty subgroups toward revision of the technical processes of instruction and, not insignificantly, to provide a means for teachers to have a major

voice in decisions affecting conditions of their work.

Unlike many federally sponsored reforms of the time, the IGE/MUS plan was not accompanied by large-scale grants or subsidies to districts, and it was to be promoted at the school-site level rather than imposed on schools by the district administration. School and district personnel were introduced to the program at regional conferences around the country sponsored by the IGE network, and local representatives of the network held further meetings with staffs in schools that expressed an interest in participating. Formal designation as an IGE school required evidence that the teaching staff had collectively agreed to participate and that the participation was endorsed by the upper administration and the school board. In exchange, schools were to receive technical assistance and, in some cases, supporting curricular materials supplied by local and regional IGE centers. Teachers and administrators were free, however, to select innovative practices known to them, whether from IGE or elsewhere, or to modify elements of the plan to suit local conditions. The only more or less invariant feature seemed to be the formation of faculty units.

The general plan of our study was to take measures in the spring (T1), before schools planning to introduce the the IGE/MUS model had implemented the program; and then to follow them for the next two school years, taking measures every six months (T2 through T5). To provide a baseline, measures were taken in another set of schools that were in the same districts but that did not intend to adopt the IGE/MUS model. The time period for our measures ran from April 1974 to April 1976. In the end, a full set of measures was available for 14 schools that a) had formally agreed to participate in the innovation, b) did not have a "unitized" form of organization, or anything equivalent to it, at T1, c) instituted the multiunit form at T2, and d) still were operating under the multiunit form at

T5. Parallel data were available from 13 schools, mostly from the same districts, that remained in the conventional, nonunitized form throughout the period. As detailed later, the measures were taken mostly by questionnaire and interview and focused on four classes of school or teacher attributes: the organization of instruction, the governance of decisions relating to the educational program, task-related communication within the staff, and staff attitudes toward their work, especially the sense of autonomy in teaching, feelings of personal efficacy in school affairs, and general job satisfaction.

Antecedent Research

When we began our investigation, two exploratory studies had recently appeared on the implications of the team structure for organizational processes and staff relationships in elementary schools, and the researchers conducting the studies had reached strikingly parallel conclusions. Both studies were comparative in design. Pellegrin (1970a, 1970b), working at University of Oregon's Center for Advanced Study of Educational Administration, investigated intensively four schools in Wisconsin that were among the first to implement the IGE/MUS model described above. He chose schools reputedly making the greatest progress in implementation, contrasting them with four other schools from the same districts that were not participants in the Wisconsin trial program. Meyer and Cohen (1971), from Stanford's Center for Research and Development in Teaching, compared eight K-6 schools in the San Francisco Bay area, selected on the twin criteria of open-space architecture and the presence of formally organized work teams, with seven others lacking these attributes. All of the "open schools," as Meyer and Cohen called them, had been operating at least a full year under the team organization (one as long as four years) but, unlike the Wisconsin schools, they were not attempting to implement a specific innovative model.

Both studies relied mainly on questionnaire replies of teachers, although Pellegrin supplemented the questionnaires with extended staff interviews.

In brief, the findings revealed marked differences between the two organizational arrangements and favored the team-organized schools on the following points:

1. Less isolation of teachers from their colleagues, as indicated by a substantially greater volume of interteacher communication regarding matters of classroom instruction or, in the Pellegrin study, by a strikingly higher number of colleagues mentioned by teachers as persons on whom their task performance most closely depended. (Principals did not figure prominently in task-related interactions with teachers in either study.)
2. Greater involvement of formal faculty groups in the intimate details of classroom instruction and their greater influence in school affairs more generally. At the same time, principals were more likely to share their decision-making responsibilities with the faculty rather than act as the school's sole authority figure.
3. Higher levels of teacher job satisfaction and, in the Meyer and Cohen study, stronger feelings of work autonomy among teachers.

In seeking interpretations of the findings, both Pellegrin and Meyer and Cohen noted the fundamental schism in the schools' authority systems, distinguishing between responsibility for the "core technology" of classroom teaching (Lortie, 1969) on the one hand, and responsibility for coordination and resource allocation decisions on the other; and they both regarded the development of collegial groups to be the distinguishing feature of the team-organized schools. However, they tended to emphasize different roots of the group-building process. Pellegrin seemed to stress the altered form of the schools' organizational structure itself as the driving force--the

constitution of small subfaculties formally empowered to make decisions affecting the instructional program and the creation of a council in which teachers could speak with a collective voice on larger issues of the school--perhaps because the Multiunit School model was so explicit on these matters. Proponents of "democratic" or "participatory decision making" have long argued the salutory consequences for morale and productivity of workers who share in planning and directing an organization's work operations, although the empirical evidence supporting the doctrine in schools is far from clear (Conway, 1984; Duke, Showers, & Imber, 1980). The small number of schools in Pellgrin's study precluded systematic analyses beyond the simple contrasts we have reported, and he considered the "power equalization hypothesis," as he called it, to be just one of several features of the work setting that could have accounted for the higher level of job satisfaction in the multiunit schools.

Meyer and Cohen, on the other hand, tended to emphasize the changed technology of work as the driving force--the replacement of the solitary one-teacher-one-class instructional form by team-planned and team-conducted instruction, particularly under conditions of high visibility afforded by open-space architecture. A closely interdependent task system requires the operatives to talk about their work and organize it collectively, taking account of the capacities and predilections of one another in doing so (Thompson, 1967). Lost is the wide discretion teachers traditionally enjoy in the conventional "egg-crate" school--a discretion teachers jealously guard against the encroachment of supervisors and colleagues alike (Lortie, 1969, 1975; Pellegrin, 1976). It was on this reasoning that the Stanford group's findings of greater feelings of autonomy among teachers in the team-organized schools came as such a surprise to them. They sought to unravel the paradox through several internal analyses and tentatively decided, in the end, that

teachers in the two different work settings interpreted the questions measuring autonomy differently: those in the conventional setting responded to them in terms of freedom from external interference in teaching, while those in the work-group setting answered them from the viewpoint of their ability to control the wider resources necessary for teaching.

Problems for Investigation

We launched our investigation with several objectives in mind. The first was the obvious one of whether or not the findings of the Pellegrin and of the Meyer and Cohen studies would reappear in team-organized schools at another time and in other places, especially if care were taken to control for alternative explanations. Both sets of investigators, recognizing the correlational character of their research designs, had suggested a variety of factors other than the school's organizational form that could have been responsible for the differences they observed. For instance, differences in job satisfaction might have been associated with systematic differences (of which there were several) in staff composition of the team-organized and conventional schools, or differences in the influence of collegial groups could have been antecedent to, rather than a consequence of, the altered organizational form. We intended to control these and similar threats to the validity of inference by using a quasi-experimental design.

Another objective was to attempt to pinpoint conditions of the school's work setting responsible for staff attitudes toward work. In what degree does teacher job satisfaction emanate from changes in the school's managerial system--in the empowerment of collegial groups with respect to affairs of the school--and in what degree does it come from alterations in the technical arrangements of classroom instruction--in particular, the abandonment of the self-contained classroom in favor of team teaching? Besides this, we were especially challenged to resolve the anomolous findings

of Meyer and Cohen regarding the enhanced feelings of autonomy among teachers in their team-organized schools. Meyer and Cohen had not systematically examined classroom teaching arrangements in the schools they had studied. Indeed, incidental evidence in their study suggests that a number of teachers did not give up the self-contained pattern upon inauguration of the formal team structure, a point that Cohen has underscored in reviewing subsequent research at Stanford and elsewhere (Cohen, 1981). For us to investigate these matters, it was necessary to obtain measures of instructional arrangements in the schools and to establish specifically which teachers were implicated in them.

Chapter Two

Methods of Study

Research Design

The investigation was based on 14 elementary schools that instituted the Multiunit School plan at the beginning of the 1974-75 school year and still were operating in that organizational form at the end of the 1975-76 school year (T5) and another 13 schools that remained in the nonunitized form throughout the same period. It employed a nonequivalent control group design (Campbell & Stanley, 1963). Data were taken in the spring of 1974 (T1), prior to implementation of the IGE/MUS model, and at six-month intervals thereafter. Our formal analyses rely on the T1 and T5 measures, although we will occasionally allude to results from the interim measurement periods (T2 to T4).

We used reasonably unequivocal criteria for deciding whether or not a school qualified as achieving the multiunit organizational form. To qualify, the school must have established two or more units encompassing all regular grade-level teachers on the staff. That is, partially unitized schools did not qualify--schools in which, for instance, teachers of the primary grades were exempted. Operationally, we depended on the staff roster supplied by the principal (or school secretary) at each data-taking wave to identify units and their memberships. We checked this information against a question asked in the teacher questionnaire regarding unit assignment, if any. (The check was well advised, for in one school the staff was oblivious to the fact that the principal had formed them into units.) Wisconsin's Multiunit model incorporated a number of other features, including cross-grading of units, instructional aides assigned to the units, formally designated unit leaders, a coordinating cabinet, and the like, but we did not use these features as qualifying criteria. It was also important for us to certify that all 27

schools were in a "conventional" organizational form at T1. We excluded a number of schools that proved already to have been either partially or fully unitized prior to implementation.

While we tried to match unitized and nonunitized schools by school district, vagaries of the field experiment limited our success. Two of the unitized schools had no companions from the same district, although nonunitized schools from similar districts nearby supplemented the set. In any event, various analyses we have conducted failed to identify important district-level effects with regard to the key variables of the study.

The Schools and Staffs

Schools included in the study were located in five Eastern and Midwestern states and were variously situated with respect to geography and clientele. Some were inner-city schools serving low-income families, others were in affluent or not-so-affluent suburbs, and still others were in small communities of rural America. Most, but not all, were public schools; four parish schools of a Roman Catholic diocese in New Jersey were included. The public schools were located in 12 different school districts varying markedly in wealth and size.

The elementary schools ranged in size from a one with a full-time faculty of 7 serving 200 pupils to another with 32 teachers and 850 pupils. Mean enrollment was 439 and mean staff size (classroom teachers) was 15.9. Schools of the unitized and nonunitized sets in aggregate were nearly identical in these respects. As to grade organization, about half of the 27 schools had the common K-6 or 1-6 pattern, 6 included the 7th and 8th grades, while 7 were essentially primary schools, covering just the first three or four grades. Primary schools, however, were more frequent among the unitized schools. About two-thirds of both sets offered kindergarten programs. The schools were alike in the number of instructional aides, music and physical

education teachers, reading specialists, and other auxiliary personnel.

Teachers of the unitized and nonunitized schools were the same, overall, in distributions of gender (9 percent male) and educational attainment (about 20 per cent had an M.A. degree), but those in the unitized schools tended to be younger and less experienced than their counterparts in the nonunitized schools. Half of the unitized teachers were in their 20s, compared with 37 percent of the nonunitized teachers, and 48 percent of the former had five years or less of teaching experience, while 39 percent of the latter were as inexperienced. This parallels Meyer and Cohen's observation of the relative youth of teachers in the innovative schools they studied (1971, p. 17). On the basis of a set of questionnaire scales measuring views of the educative process (Wehling & Charters, 1969), we also found unitized teachers to be somewhat less traditional in their pedagogical beliefs. The aggregate differences in these areas at T5 had existed at T1 as well.

All but two principals were full-time administrators of their buildings. In one small, nonunitized school the principal also taught part time (7th and 8th grades), and another principal shared his time about equally between two nearby buildings, one a unitized and the other a nonunitized school, both of which participated in the study. Four schools had full-time assistant principals--three of them in the unitized set. Overall, one-third of the principals were female. Female principals were a bit more common among the unitized schools at T5 (5 of 14 compared with 3 of 13 in the nonunitized schools). Just as the teaching staffs were younger and less experienced in the unitized schools, so too were the principals. Seven unitized principals were under 40 years of age, but only four nonunitized principals were as young; the median years of administrative experience of the former was 7.5 and 10 years for the latter. The two sets of schools differed notably in the length of time principals had been administrators of

their particular buildings. At T1, almost half of the schools committed to the IGE/MUS innovation had principals in their first year, whereas none of the comparator schools had first-year principals. The median position tenure in the unitized and nonunitized schools was 3 and 7.5 years, respectively. The sets of schools differed in another way with respect to their principals. Between T1 and T5, three of the unitized schools experienced turnover in the principalship; none occurred in the nonunitized schools. (We have been unable to locate any special significance in this differential.)

Staff Retention

In light of our subsequent data analyses, we should report our tabulations of teacher retention over the two-year period. Of the 412 grade-level teachers on the rosters in the spring of 1974, 265 (64.3 percent) were still on the faculties of their respective schools in the spring of 1976. Wide differences in staff stability appeared among the schools as a whole. Only two of the original ten teachers in one small school (unitized) still taught in the classrooms in the spring of 1976, while in another small school (nonunitized) the original complement of eight was reduced to five. At the other extreme, two small schools (one unitized and one nonunitized) lost but one teacher in the two-year period. While teacher retention was slightly greater in the nonunitized schools (66.0 percent), the difference between them and the unitized schools (62.8 percent) was not appreciable and certainly not significant by the Chi-square test.

Measures

Here we give a relatively brief account of the variables measured in the study and employed in the present report. With respect to three measures designed specifically for the research--task interdependence in teaching arrangements, control structure, and teacher sense of autonomy--we will refer the reader to sources where the underlying conceptualizations and development

of measurement procedures are more fully detailed. Apart from these three, the other measures we used had been used in earlier investigations. Those relating to interpersonal communication among teachers were adapted from earlier studies by Charters (1969), while the remainder were taken directly from the Stanford study, largely to assure continuity with that investigation.

The focus throughout the study was on regular grade-level teachers and conditions of the school's work and governance conditions bearing on them. Although auxiliary personnel of various sorts enter importantly into the instructional program of many schools, especially schools fiscally able to supply them, the rationale for, and anticipated consequences of, IGE/MUS are framed in terms of the central cadre of grade-level teachers, their students, and the school's core academic program. We excluded from our data collection such personnel as paraprofessionals, intern and student teachers, reading specialists, teachers in special programs for handicapped pupils, and itinerant (or school-based) teachers of music, art, and physical education. Thus, when we speak of a school's staff, we include only certified teachers of grades K to 8 (or whatever the grade coverage was in a given school).

Interdependent teaching arrangements. We used the concept of task interdependence to afford a theoretically significant means for describing the school's basic work organization and, specifically, for distinguishing between traditional teaching arrangements (the so-called self-contained classroom) and more intricate arrangements envisaged by the multiunit prototype. Following the writings of Weick (1965) and Thompson (1967), our basic idea was that personnel teaching independently pose few constraints on the work performance of one another, while those engaged in interdependent arrangements must take the others' work plans and performance into account. The greater the level of interdependence, the more demanding become the

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problems and procedures for managing the contingencies that arise among the personnel. Translation of the concept of task interdependence into educationally relevant terms is set forth in several papers by Charters (1964, 1973, 1975). In our formulation, the self-contained classroom is the epitomy of independence; it is the circumstance in which a teacher instructs a single set of pupils in the central curricular areas throughout the school term or year. No other teacher shares in the instructional responsibilities for the pupils. Team teaching, in its truly joint form, lies at the extreme of task interdependence. In this pattern, two or more teachers assume responsibility for planning and conducting the instruction of the same group of students in most if not all of the core subject areas (Shaplin, 1964). Other teaching arrangements fall between the extremes, including the departmentalized plan familiar in secondary and higher education, where teachers share in the instruction of the same students but instruct them in different subject areas.

The data-taking procedure we used to identify instructional arrangements entailed asking grade-level teachers to record for ten consecutive school days the particular pupils they taught in each of five subject areas--math, reading, language arts, science, and social studies (Packard et al., 1976, Appendix A). Special forms, similar to regular attendance booklets, were prepared for each school to facilitate teacher logging of instructional contacts. They listed the names of a 20 to 25 percent random sample of enrolled pupils (the larger percentages for smaller schools). Teachers checked the names of students they taught at any time each day and the subject or subjects in which they instructed them. In the first wave of data taking, we sought to counter the problem of inordinately long lists of pupils' names in booklets, especially for larger schools, by limiting the lists to names of pupils in two, or sometimes three, grade

clusters--to be used specifically by teachers of those grades. Not only was this administratively difficult; it also made it impossible to discern instances of interdependence between the grade clusters. After the first wave, the booklets listed all pupils in the school's sample.

Logs were obtained from nearly all the regular grade-level teachers in the schools, with two exceptions. Insufficient returns of teaching logs from one of the unitized schools at most data waves prohibited the calculation of measures for it. In addition, we did not uniformly ask 7th- and 8th-grade teachers to maintain logs in the first data-taking wave on the assumption, proved to be mistaken, that these grade levels would not be incorporated in the multiunit plan. Overall return rates were 83 percent of the targeted teachers in the first administration and ranged from 90 to 93 percent in the subsequent four data waves.

The log data were assembled for each school in a pupil by teacher by subject data matrix, with entries indicating the number of days a sampled pupil was taught in a given subject by a given teacher. Analysis of the matrix allowed us to identify interdependent teacher pairs. If a pair of teachers was found to instruct two or more sampled pupils in common at least twice during the ten-day data-taking period, the pair was denoted as an instance of task interdependence. (Instances of interdependence were further classified with regard to their form and intensity, but these measures will not be used systematically in the present report.) For a school-level measure, we made a simple count of teachers implicated in task interdependent arrangements with any other teacher, expressed as a percentage of the school staff providing the requisite information. Similarly, for the individual-level analysis, a teacher was coded 1 if he or she were a member of a task-interdependent pair and 0 otherwise.

Collegiality of the decision structure. Our interest was in

locating individuals or groups formally responsible for that important subclass of organizational decisions designed to regulate or coordinate the contributions of operating personnel, or teachers in our case (Etzioni, 1965; March & Simon, 1958; Simon, 1947; Tannenbaum, 1968). The general empirical approach we employed was roughly similar to those of several educational studies, including Fogarty and Gregg (1966), Moran (1971), Otto and Veldman (1967), and Pellegrin (1970b). It presumed that the decision structure of the school is likely to differ with the substantive issues at stake; and we chose, in our study, to probe them at a highly specific level and then identify common patterns empirically. The measures were based on rather intricate procedures for collecting and reducing data; details on the exact procedures are available in other reports (Charters, 1981; Jovick, 1978; Packard et al., 1976, Appendix B). Here we give a summary.

In-depth interviews lasting about an hour were conducted at each data-taking wave with a few informants (four to five teachers) especially chosen for the likelihood that they would be knowledgeable regarding the practices and conditions of their schools. The interviews, along with self-administered questionnaires delivered to the informants in advance, identified a large number of issues (approximately 60 per interview) covering such matters as subjects taught, instructional methods, disciplinary practices, pupil-progress reports, and the like. Interviewers questioned informants as to who made decisions on the issues and for whom the decisions were binding. The interviews and initial coding were subcontracted to an experienced survey research organization.

Each issue was classifiable according to one of five types: Type C (Collegial), in which only teachers affected by a decision are responsible for making it; Type P (Principal), in which the decision is made by the principal (or other building administratrator), and no affected teachers are

involved; Type S (Shared), in which the decision is made jointly by the principal and some or all affected teachers; Type O (Outside), in which the decision is made by agents or agencies outside the given school, and no affected teachers are involved; and Type D (Discretion), the limiting condition in which a teacher reaches an individual decision regarding task performance that governs no one's behavior but his or her own. By eliminating redundancies and rarely occurring events, we reduced the large number of specifics to 13 issues common to all schools. Using techniques of multidimensional scaling, we grouped the 13 issues into three "domains" based on similarities of their decision-type profiles:

> Instructional Processes (Domain I): issues relating to when and how long subjects were taught, the teaching methods used, disciplinary practices applied, instructional materials actually used, and frequency and methods of reporting to parents, beyond regularly scheduled times. (Teacher discretion was the dominant decision type.)
>
> Deployment of teachers and pupils (Domain II): issues relating to the assignment of teachers and of pupils to classes, the formation of subgroupings among pupils, and the assignment of teaching responsibilities with respect to them. (Principal-made decisions tended to be the dominant type.)
>
> Systemic decisions (Domain III): issues relating to curricular areas to be covered, textbooks available in classrooms, and timing and methods of reporting pupil progress to parents. (Outside decisions predominated.)

To reach a score for collegiality of a school's control structure, we pooled the decision types the several informants reported for each of the 13 areas and expressed them as percentages. The percentage of Type C decisions were then aggregated across areas for a mean percentage in each domain. The aggregation procedure circumvented difficulties associated with widely differing numbers of decisions reported in the domains, an artifact due in part to the specificity of the informant interviews.

Principal and teacher-group influence. As another approach to examining the school's governance system, we included in the teacher

questionnaire the set of questions the Stanford researchers had asked concerning the influence of various actors in the school setting on classroom and school affairs (Meyer & Cohen, 1971). These measures were generally similar in form to those Tannenbaum (1968) and other organizational sociologists used under the rubric of "influence," "power," or, in Tannenbaum's case, "control structure." Pellegrin had used a variation in one part of his Oregon study. Essentially, teachers in a school serve as raters of the amount of influence of the actors; the meaning of "influence" is not elaborated. We surmised that the questions would tap diffuse processes of educational governance not assessed by our measure, described above, of the locus of authoritative decisions.

In the present report we limit attention to two actors whose influence was assessed: "the principal" and "school committees, teams, or teacher groups." (Meyer and Cohen had teachers also judge the influence of "other teachers," considered as separate individuals.) Respondents were asked to rate the amount of influence these parties exercised over "your own . . ."

Administration of school rules and regulations.
Student grading practices.
Curriculum planning.
Teaching specific lessons or classes.
Student control and discipline practices.

Response alternatives were "none," "not very much," "a moderate amount," "a considerable amount," and "a great deal." These responses were weighted from 1 to 5 for scoring purposes. Teacher responses were averaged over the five items for an index of the classroom influence of each actor.

Where the focus of the preceding questions concerned the influence of actors on the operations of the teacher's own classroom, a similar set of questions dealt with actors' influence over broader educational affairs of the school. The question and specific areas were: "How much influence do

[actors] here in this school have over . . ."

Determining the educational goals and objectives of the school.
Establishing school rules and regulations.
Student grading practices.
General curriculum planning.
Student control and discipline procedures.

Scoring proceeded in a fashion parallel to that described above to obtain indexes of school-wide influence for principals and teacher groups. School means were obtained by aggregating to the school level indexes calculated from responses of indivual teachers. Our estimates of interrater reliability of the scores were in the .60s and low .70s, suggesting only moderate agreement among the judges. Reliability estimates were lower for the actors' influence on the teacher's own classroom than on school affairs, as one might expect, since raters could well have been reporting on different realities confronting them. The individual scores were used in teacher-level analysis in the same way that Meyer and Cohen (alluding to them as "perceptions of influence") had used them.

Interpersonal communication. Where the Stanford investigators had questioned teachers about the frequency of their discussions with "other teachers" on some six matters related to teaching (such as grading students, curriculum planning, and student discipline), we chose to use a sociometric-like approach in order to identify particular patterns of communication. The methodology had been employed in a number of previous investigations (Charters, 1969). Specifically, we furnished questionnaire respondents with rosters of grade-level teachers in their respective schools and asked them to describe the frequency with which they talked regularly with each teacher about "classroom activities," "school-wide matters," and "matters unrelated to school or teaching." Respondents were provided four frequency categories: "at least daily," "several times weekly," "about once a week," and "once or twice a month." Respondents were instructed to leave

spaces blank for teachers with whom they talked less often than once a month.

In the first wave of data-taking, respondents were asked to write the names of other staff members with whom they talked rather than fill in blanks on faculty rosters. Name-writing proved to be an arduous task for respondents faced with a fairly lengthy questionnaire, and it was also difficult for our coders to identify all the names written, given the respondents' proclivities for using using familiar names or omitting (or misspelling) last names, so we provided rosters at T2 and thereafter. It was only with reluctance that we made the procedural change, dictated by the necessity of maintaining the respondents' cooperation, so vital to a longitudinal investigation. The alteration had the effect, as one might anticipate, of increasing the number of other teachers with whom respondents reported they had relatively infrequent communication. There are no grounds for believing, however, that the change differentially affected the findings related to unitized and nonunitized schools.

It was possible to score responses in different ways, depending on the purpose of analysis. For the present analyses we assigned scores to each pair of classroom teachers in a school according to the following scheme:

	Report of Teacher J				
Report of Teacher I	At least daily	Several times weekly	Once a week	Once or twice a month	No nomination
At least daily	5	2	1	1	0
Several times weekly	2	2	1	1	0
Once a week	1	1	1	1	0
Once or twice a month	1	1	1	1	0
No nomination	0	0	0	0	0

Thus, if both Teacher I and J agreed that they talked "at least daily," the pair was scored 5, but if Teacher I reported conversations "at least daily" while Teacher J said they talked "several times a week," the pair was scored according to the less frequent value, 2. Other scores were derived

similarly. The reader will recognize that the scoring weights correspond loosely to a per-week conversation rate. It is also apparent that only reciprocated nominations were credited; a pair received a score of 0 when one teacher failed to mention conversations with the other, regardless of the frequency of discussions claimed by the first. The foregoing scores were calculated separately for the three topics of communication.

The scoring described so far applies to a given pair of teachers in a school. To arrive at a mean score reflecting the intensity of communication for the school's teaching faculty as a whole, we aggregated the pair-wise values over all pairs in the school and divided them by the number of pairs of reciprocated communication (i.e., frequency scores greater than 0). It was also possible to use a parallel procedure to disaggregate the pair-wise values so they would be applicable to individual teachers. For teacher-level analyses, communication intensity was the average frequency of a teacher's communication--averaged over all teachers with whom he or she had reciprocated contacts. Again, scores were obtained separately for classroom, school, and nonwork topics of conversation.

Feelings of autonomy. The curious finding by Meyer and Cohen of the higher levels of teacher autonomy in schools operating under a formal team organization was a prime instigator of the present research. Hence, we were especially interested in gaining clarity with regard to the concept of autonomy and in assuring a reasonably firm measure of it.

Meyer and Cohen derived an Index of Individual Teacher Autonomy, as they called it, from a question to which teachers replied at the same time that they were asked to rate the influence of other actors in the school. Specifically, teachers reported their own influence over their own classroom operations ("How much influence do you have over your own . . ."). Otherwise, the question format and scoring procedures were identical. We

repeated their measure in the present investigation. We were concerned, however, that the Index would display spuriously strong correlations with attributions of influence to teacher groups and to the principal by virtue of sharing the same response format--a potential "methods bias" (Campbell & Fiske, 1959).

Correspondingly, the research staff developed as an alternative measure a 24-item Likert scale that focused on teachers' affective feelings about their teaching circumstances. Drawing on the formulations of Blauner (1964) and Lortie (1969, 1973), our "sense of autonomy scale" tapped teacher feelings of control over the pace of work, freedom from the pressure of work, freedom to exercise choice in the techniques of work, freedom to determine the criteria by which progress in work is judged, and freedom from undue surveillance of one's work performance by others. Using a scale ranging from "strongly disagree" to "strongly agree," teachers answered such questions as these:

> On the whole, my students and I can establish the rhythm of daily activities rather than have it determined for us by people or events outside the classroom.
>
> Generally speaking, I feel as though the teaching techniques I can use are closely controlled in this school. [Reverse scoring]
>
> I feel I have little to say over how the progress of my students is judged. [Reverse scoring]
>
> I simply cannot find the time I need in this school to do the kind of job of teaching I know I am able to do. [reverse scoring]

Scores averaged over the 24 items fell in a range from 1.0 to 6.0, the higher values representing strong sense of autonomy. A full account of the conceptualization and scale construction of the measure is given in Packard et al. (1976, Appendix C).

Internal consistency estimates (Coefficient Alpha) were .70 for the 5-item Index of Autonomy and .90 for the 24-item Sense of Autonomy scale.

Mean test-retest correlations (six-month intervals) were .58 and .66 for the two scales, respectively.

Job-career satisfaction. We used the job satisfaction measure that the Stanford group had devised for their study. It asked five questions covering satisfaction with the present job, satisfaction with career choice, and likelihood of remaining in teaching. By virtue of their coverage, it seemed to us propitious to describe the scale as a measure of job-career satisfaction. (For details on the questions and scoring, see Meyer and Cohen [1971] and Packard et al. [1976, Appendix D].) Teachers' scores tended to crowd the high end of the 5.0 to 22.0 scoring continuum (overall mean of 17.75 and standard deviation 3.35). The distribution displayed a strong negative skew, as had been found in the Stanford study (Meyer & Cohen, 1971, p. 50); the condition 's common in measures of teacher job satisfaction. The estimated internal consistency of the measure was .80 and test-retest correlations averaged .77.

We held no particular expectations regarding the relationship of autonomy and job satisfaction other than the general conception that feelings of autonomy are a facet of the far broader construct of job-career satisfaction. Satisfaction with one's career and present job should be sensitive to a wide array of personal and occupational contingencies, well beyond those to which feelings of work autonomy would be responsive. Only when a teacher places a paramount value on autonomy in an occupation might one anticipate a close correspondence between the two.

Questionnaire response rates. Except for measures of interdependent teaching arrangements and the school's decision structure, our data came from questionnaires personally administered to principals and teaching faculties. Although the replies were not anonymous, teachers were assured that their responses would be held confidentially by the research

staff. Response rates for the five data-taking waves were remarkably high, attesting to the level of cooperation of the participating teachers. Except for T1, the return rates of useable questionnaires ranged from 95 to 98 percent (90 percent at T1). The lower rates at T1 were due to our failure to target systematically seventh- and eighth-grade teachers for data collection and to the fact that our teacher rosters had not yet been stabilized sufficiently to detect missing replies.

Methods and Issues of Data Analysis

A hierarchical multiple regression procedure (Pedhazur, 1982) was the primary statistical approach used in the present report. In testing differences between unitized and nonunitized schools in the T5 values of variables, as we do in the main body of our presentation, T5 values were regressed on the dummy-coded unit organization variable (1 for unitized, 0 for nonunitized) after introducing "before" (T1) values of the variable. The increment in explained variance due to unit organization was tested for statistical significance. We adopted the .05 level as our criterion of statistical significance throughout the analyses. We also entered an interaction term as a third step in the regressions to check for inhomogeneity in estimated slopes of the regression lines; this term was a product of T1 values of the variable and the unit organization variable. We will comment on any appreciable interaction effects as we encounter them. A slightly different hierarchical regression procedure also was used in the last analyses, as we will then explain.

An issue more problematic than the statistical tool concerns the multilevel character of the data--the appropriate unit of analysis. Because of the through-time feature of the research design, the problems go beyond those usually discussed in connection with multilevel data (Burstein, 1980; Sirotnik & Burstein, 1985). The principal advantage of the design is its

ability to remove between-school or between-teacher variability in the measures (which are known to be substantial) as a source of disturbance. It alleviates, as cross-sectional research does not, the necessity of measuring and then attempting to control statistically contemporaneous variables that might furnish plausible rival hypotheses. In our investigation, the school is the smallest unit that "stands still" over a two-year period. Individual teachers come and go, as the retention rates described earlier attest; approximately one-third of the teachers who were present when data were taken in the spring of 1974 no longer were present two years later. That leaves, though, the other two-thirds who did "stand still."

That the school might be the appropriate unit of analysis is suggested by the nature of the generalizations at stake in research such as ours. Comparative organizational studies seek to make statements about the circumstances that would prevail under one kind of organizational structure as opposed to another. What might one expect of the school's governance system and work arrangements if they were organized around small faculty teams rather than individual classrooms? What consequences would ensue for faculty morale or staff sentiments of autonomy? Closer inspection, however, would demonstrate that the arguments typically hinge on individual-level processes, less on group- or organization-level processes. From this perspective, school-level analyses may not be entirely appropriate.

Many of the key concepts of the study refer explicitly to properties of the school, not properties of teachers (Lazarsfeld & Menzel, 1969). This includes the classification variable itself--unit organization. Only the attitudinal data specifically reference individual attributes. Collegiality of the decision structure is an organizational characteristic; the influence of teacher groups or of the principal (with respect to school affairs) presumably describes a single condition prevailing in the school, even though

the measurement process involves pooling the "perceptions" of respondents to attain an overall rating. (Certain of our concepts, and our measures of them, concern neither individual nor organizational properties but relationships between particular individuals. Task interdependence and interpersonal communication are prime examples of relational data [Lazarsfeld and Menzel, 1969], although we have described how we have disassembled them or aggregated them to the individual or school level of analysis.)

Our resolution was to analyze the data at both levels, emphasizing the school level when distinctly organizational properties were in question and emphasizing the teacher level when attitudinal variables were involved. A word is in order respecting the points of incomparability of the two approaches. For one thing, the individual-level analyses implicated a select cohort of teachers who had been with their respective schools for the full period; all had undergone the experience of change, if change itself had novel effects. The same would not be true for some of the teachers in the school-level analyses, but one might reasonably wonder if processes of selective recruitment and retention during the two years might be operating at this level. For another thing, at the individual level the cases were implicitly weighted by faculty size, such that events in large schools (with more teachers) were weighted more heavily than events in small schools. This would be compounded, of course, by the substantial school-to-school variations in staff retention rates. Thirdly, the degrees of freedom available at the school level (N = 27) were much smaller than at the individual level (N = approximately 200, depending on missing data) and, hence, stronger effects were required for stable (i.e., significant) estimates. A final consideration of moment is the "psychologistic bias" inherent in individual-level analyses, where the teacher's "perception" of the work setting is correlated with his or her attitude toward work. Not

only can spuriously strong relationships be observed by virtue of their sharing the same measurement source, but the difficulties of inferring direction of causality are particularly profound as well. In what degree are reports of the work environment shaped by the teacher's sentiments rather than the other way around (Campbell & Stanley, 1963)? For data aggregated to the school level, method error, at least, does not offer as compelling an alternative interpretation.

Chapter Three

Change in Work and Governance Systems

Before reporting results of the comparative data, we will say a few words about the managerial structure of the multiunit schools as it had evolved after two years of implementation. All, of course, had established formal units in the fall of 1974 (T2) and had retained them through the ensuing two years; that was the basis on which they qualified for inclusion in the first place. Units typically consisted of three, four, or perhaps five teachers, and anywhere from two to seven units were formed in a school, depending largely on staff size. Nearly half the units comprised teachers of the same grade level; cross-grading of units mainly appeared in small schools where it was the only alternative. Unit meetings were held at least once or twice a week in most of the schools, usually at times set aside during the regular working day, although in five schools the meeting frequency, which had been high in the first year, had tapered off to a monthly rate or less by the spring of 1976.

All schools created the position of unit leader. Chiefly, the position was appointive (by the principal), but in a few schools the choice of leader was left to the unit membership. With a few exceptions, no special perquisites attached to the position, and it is fair to say from various pieces of evidence that the leader's role had not emerged as an especially distinctive or powerful one. In Lortie's terms (1964), teachers had apparently opted for the "horizontal-collegial" form of authority arrangements rather than the "vertical-bureaucratic" form. In keeping with the Multiunit School model, all but one school formally constituted an Instructional Improvement Council at the outset of implementation to coordinate interunit affairs and advise the principal on various common issues. These became fixed features in about two-thirds of the schools,

where the councils met on a regular monthly schedule, but were generally nonfunctioning in the other third.

The foregoing characterization underplays important school-to-school differences in "fleshing out" the formal structure. We sensed that one of the schools, or perhaps two, might have been found to abandon the implementation effort had we continued our observations into the third year. It also underplays substantial variations within the schools in the extent to which units and their members performed as units. Indicators of unit performance we had obtained revealed that one or two units might be highly active entities in a given school, while others were essentially moribund (Charters, 1980b).

Task Interdependence in Teaching Arrangements

The teaching logs that grade-level teachers maintained during a ten-day period, noting the pupils they taught in each of five core subject areas (math, reading, language arts, science, and social studies), provided a wealth of information regarding the teaching arrangements prevailing in the elementary schools included in our study. We will comment briefly on some general features of the arrangements we observed before reporting on the differences between the unitized and nonunitized schools.

1. We were surprised by the number of teachers, even in the nonunitized schools of the sample, who were linked in some kind of task interdependence relation with fellow teachers (Charters, 1976). In aggregate, they were barely outnumbered by those teaching their students alone--i.e., in the self-contained classroom mode. There were marked variations among the 13 conventional schools in this regard. In one of the larger nonunitized schools, only about 10 percent of the staff taught independently of their colleagues during our five observation periods. In several schools, on the other hand, all or nearly all teachers taught in the

self-contained arrangement.

2. The "systems" of interdependence we observed were so diverse as to defy simple classification. The number of teachers implicated in such "systems" ranged from two to seven or eight or even higher, although two-teacher systems were modal. By and large, the interdependencies arose among teachers at the same or adjacent grade levels, and they became increasingly common as grade level increased. Initially, we had anticipated rather regular patterns in the conventional schools, such as intact-class trades among teachers ("You teach my class math and I'll teach yours social studies") or efforts to regroup pupils homogeneously ("If you take the fast readers, I'll work with the slower ones"). The data quickly dissuaded us of the view. While we found a number of the simpler patterns, intact-class exchanges were by no means the rule; more often the exchanges entailed fractions of classes.

3. One rather regular pattern of interdependence deserves special note because of its stability through time. In its purest form, it would consist of five teachers, all teaching, say, the school's 7th- and 8th-graders. Each teacher would be a subject-matter specialist in the system, in the sense that each instructed students in one and only one of the five curricular areas. Allowing for modifications of the pure type, we found it to be a fairly common arrangement in both the nonunitized and unitized schools, especially among teachers of the higher grades.

4. The highly intense form of interdependence Shaplin (1964) defined as characterizing bona fide team teaching (two or more teachers instructing the same group of students in most if not all the core subject areas) was almost never observed in the schools, unitized or nonunitized. Even joint instruction in one or two subjects was a relatively rare phenomenon; and when it appeared, it usually entailed common instruction only sporadically during

the ten-day reporting period. This was true even in those unitized schools where task interdependence reached its peak.

5. Except for the pattern described above in 3, task interdependent relations tended to be quite transitory--emerging and disappearing even in the course of a school year when they were not disrupted by staff turnover; and they were especially fragile in the face of personnel replacements. The observation is consonant with Cohen's (1981), based on several studies at the Stanford R&D Center. There was little predictability from one year to the next as to the colleagues with whom a given teacher would be linked or, indeed, as to whether the teacher would be implicated in a set of interdependencies at all. The systems had the semblance of ad hoc, voluntary arrangements among neighboring teachers rather than centrally planned or mandated forms. This was true in the unitized schools, although the controlling hand of unit membership occasionally could be discerned in them.

Comparison of unitized and nonunitized schools. Table 1 reports the average percentages of task interdependent teachers in unitized and nonunitized schools over the five data-taking waves. As we said before, insufficient returns of teaching logs were available in one of the unitized schools, so the mean was based on an N of 13. The modest increase in interdependence among the nonunitized schools between T1 and T2 was due, we believe, to the data-taking method change also described earlier. A sharper increase occurred in the unitized schools in the same period, and thereafter the mean percentages remained at a fairly constant level in each set. The table also reveals that a higher level of interdependence prevailed among the unitized schools at the outset--before implementation of the multiunit plan had begun.

Results of the school-level regression of T5 task interdependence

Table 1. Mean Percentage of Task Interdependent Teachers for Unitized and Nonunitized Teachers, by Wave

	Unitized (N=13)[a]		Nonunitized (N=13)		Both (N=26)	
Wave	Mean	S.D.	Mean	S.D.	Mean	S.D.
T1	52.8	24.11	35.5	25.62	44.2	43.44
T2	73.2	23.16	45.9	31.42	59.5	32.55
T3	76.4	24.65	43.5	35.74	60.0	29.78
T4	74.8	18.47	49.1	29.73	62.0	41.56
T5	77.0	16.47	43.8	29.92	60.4	36.36

[a]Data missing for one school.

percentages on unit organization, controlling for the differential T1 values, are shown in Table 2. The T1 values accounted for about 22 percent of the variance in the T5 values, to which the school's organizational form added another 20 per cent. The increment in explained variance was significant beyond the .05 level. We should note that entry of the interaction term in the regression explained an additional 7 percent of the variance in T5 values. While this increment was not significant at the .05 level ($F = 3.031$, 1/22 df), it was nonetheless appreciable. Our study of the interaction indicated that most of the gains among the unitized schools occurred in schools in which relatively few teachers were interdependent at T1; those that already had high proportions of interdependent teachers, as a number of them did, displayed far less gain. The slope of the regression line of T5 values on T1 values in the unitized schools alone was essentially flat and the T1-T5 correlation was zero, whereas the T1-T5 correlation for the nonunitized schools was .55, indicating appreciable predictability of T5 percentages from percentages at T1.

Interpersonal Communication among Teachers

Again, we begin with a couple of general observations regarding patterns of communication in teaching staffs of the schools. Further findings are reported in special studies we and others have conducted (Charters, 1980a; Packard et al., 1978; Ward, 1981).

1. It would be hard to argue that teachers were isolated from one another, insofar as conversations about classroom affairs were concerned. Tabulations revealed that teachers in the conventional schools included in the study talked on average with two to three other grade-level teachers on matters of classroom concern at least several times weekly, and one of those contacts was on a daily basis. (These figures would be doubled for "sociable" conversations of a nonwork variety.) Striking differences were

Table 2. Regression of T5 Percentage of Task Interdependent Teachers on Unit Organization, T1 Values Controlled

(N = 26)[a]

Dependent	Independent	Beta	R^2	R^2 Change	F
TaskInt T5	TaskInt T1	.302	.216		
	UnitOrg[b]	.479	.419	.203	8.03*

*p < .05, 1/23 df.
[a]Data missing from one school.
[b]Dummy coded: Unitized = 1, Nonunitized = 0.

observed, however, from one school to the next in the level of work-related communication, and these differences tended to persist through the two-year period, as though each school had a distinctive communication environment. Work-talk seemed endemic in some schools, while few conversations were reported in others.

2. Patterns of work-related communication were importantly shaped by grade assignments, as documented in other research (Charters, 1969). Teachers talked about classroom matters with colleagues who taught at the same or immediately adjacent grade levels and rarely with teachers two or more grades removed (Ward, 1981). The effect of grade assignment undoubtedly was reinforced by the physical propinquity of teachers within the school, given the near-universal practice of locating similar grade levels in the same part of the building.

Comparison of unitized and nonunitized schools. Wave-by-wave trends in the mean intensity scores for the two sets of schools are given in Table 3. The data indicate few consistent differences between the two sets of schools until the end of the second year, and the difference then with respect to communication on both classroom and school topics appears to be due as much to an unexplained downward drift in intensity scores among teachers of the nonunitized schools as to the upward shift in the unitized schools.

Formal analyses of differences in the communication intensity in unitized and nonunitized schools at T5 are presented in Table 4. They demonstrate that unitized schools had distinctively higher intensity scores at T5 than nonunitized schools with respect both to classroom and school topics, but not with respect to nonwork matters. The fact that nonwork communication did not differ significantly in the unitized schools argues in favor of an innovation-specific effect on communication. The effects of unit

Table 3. Mean Intensity of Teacher Communication on Three Topics for Unitized and Nonunitized Schools, by Wave

	Unitized (N=14)		Nonunitized (N=13)		Both (N=27)	
Wave	Mean	S.D.	Mean	S.D.	Mean	S.D.
			Classroom Topics			
T1	2.62	.487	2.59	.435	2.61	.454
T2	2.19	.369	2.33	.745	2.26	.574
T3	2.39	.476	2.31	.647	2.35	.555
T4	2.16	.283	2.18	.350	2.17	.311
T5	2.32	.412	1.97	.429	2.15	.450
			School Topics			
T1	2.20	.587	2.16	.476	2.18	.526
T2	1.87	.330	1.97	.654	1.92	.504
T3	2.03	.387	2.01	.337	2.02	.357
T4	2.01	.207	1.94	.399	1.97	.309
T5	2.09	.367	1.80	.316	1.95	.369
			Nonwork Topics			
T1	2.79	.575	2.43	.517	2.62	.566
T2	2.13	.356	2.25	.754	2.19	.574
T3	2.23	.399	2.21	.337	2.22	.364
T4	2.27	.303	2.22	.399	2.24	.346
T5	2.42	.392	2.30	.497	2.36	.441

Table 4. Regression of Intensity of Faculty Communication at T5 on Unit Organization, T1 Values Controlled

(N = 27)

Dependent	Independent	Beta	R^2	R^2 Change	F
CommClass T5	T1 Values	-.358	.120	-	
	UnitOrg[a]	.415	.292	.172	6.08*
CommSchl T5	T1 Values	-.043	.001	-	
	UnitOrg[a]	.408	.167	.166	4.79*
CommNonW T5	T1 Values	-.098	.002	-	
	UnitOrg[a]	.166	.027	.025	.61

*$p < .05$, 1/24 df.
[a]Dummy coded: Unitized = 1, Nonunitized = 0.

organization on classroom and school communication were about the same, as indicated by the Beta coefficients of .415 and .408, respectively. In light of the through-time trends, noted above, we cannot be sure whether these effects are enduring ones or whether they are limited to the unusual circumstances in the nonunitized schools (or some of them) in the final year. Only a longer time series would tell.

Collegiality of Decision Structures

Informant interviews about the locus of decisions affecting their teaching yielded a wealth of highly detailed information. Only a few points will be summarized here. (See Packard et al., 1978, Chap. 4; Charters, 1981.)

Anticipations were borne out regarding differences in decision structures, depending on the issues at stake. Across the 13 common issues we identified, they ranged from issues for which teachers had nearly unfettered discretion (Type D) to others generally controlled by the school administrator, either acting alone (Type P) or jointly with the staff (Type S), and to issues where the responsible parties lay predominantly outside the school and perhaps the school district (Type O). It would be a gross simplification to describe the schools' educational programs as governed by a single decision system.

Considering just the conventional schools, the results definitively documented the latitude of choice accorded professionals for the core technology of the teaching craft (Lortie, 1969, 1975; Pellegrin, 1976). Modes of interacting with pupils, the particular manner of teaching, scheduling instruction during the school day, the choice of instructional materials used in teaching, and classroom disciplinary practices were almost exclusively discretionary. If other parties were implicated in these core decisions, it was the teacher's close colleagues (Type C); almost never did

administrators or parties outside the school share responsibility for them. This is not to say, of course, that there were no constraints on choice. The teacher, for instance, might choose when and how to teach math during the school day, but he or she was not free to decided whether to teach math. That decision was beyond the province of either the teacher or anyone else in the school.

Decisions regarding how classes were formed, the assignment of teachers to them, and other coordinative matters were predominantly in the province of principals, although there was considerable school-to-school variation in the extent to which members of the teaching staff as well were involved in them. (We found that concentration of responsibility in the principalship was systematically greater in schools of larger size.)

Comparison of unitized and nonunitized schools. That the percentage of collegial (Type C) decisions in the unitized schools increased over the five data-taking waves is made plain in Table 5. The increase was apparent in both Domain I, covering the eight decision areas we called the Instructional Processes Domain, and the two areas we grouped as the Teacher and Pupil Deployment Domain. (We do not show data for the so-called Systemic Domain in this report.) The numbers also show that the unitized schools had a head start over the nonunitized comparators at T1 before implementation began. Table 6 reports the results of the regression analyses testing the T5 difference, controlling for T1 values. School type explained an additional 43 and 36 percent of the variance in T5 values beyond that accounted for by the T1 differences in Domains I and II, respectively, significant beyond the .05 level. Other analyses we have conducted suggest that the increase in collegial decisions in the unitized schools in Domain I occurred at the expense of the discretion of individual teachers (Type D) and in Domain II mainly at the expense of the principal's involvement (Types P and S).

Table 5. Mean Percentage of Collegial Decisions (Type C) for Unitized and Nonunitized Schools, by Wave

	Unitized (N=14)		Nonunitized (N=13)		Both (N=27)	
Wave	Mean	S.D.	Mean	S.D.	Mean	S.D.
			Domain I			
T1	10.6	8.31	8.0	6.49	9.3	7.46
T2	17.5	10.56	9.1	6.49	13.5	9.66
T3	17.6	11.17	7.9	5.30	12.9	7.45
T4	16.3	11.17	3.7	2.97	10.5	10.35
T5	20.1	11.96	4.3	4.10	12.5	11.98
			Domain II			
T1	27.9	14.88	15.0	13.13	21.7	15.28
T2	34.0	22.26	9.2	9.68	22.1	21.23
T3	42.4	24.90	10.7	14.47	27.2	25.82
T4	39.9	25.02	10.6	15.43	25.8	25.40
T5	45.4	27.25	7.3	11.50	27.1	28.46

Table 6. Regressions of Collegiality of Decision Structures at T5 on Unit Organization, T1 Values Controlled (Domains I and II)

(N = 27)

Dependent	Independent	Beta	R^2	R^2 Change	F
CollDecI T5	T1 Values	.047	.020	-	
	UnitOrg[a]	.664	.448	.428	18.60*
CollDecII T5	T1 Values	.048	.111	-	
	UnitOrg[a]	.662	.468	.357	16.12*

*p < .05, 1/24 df.
[a]Dummy-coded: Unitized = 1, Nonunitized = 0.

Principal and Teacher-Group Influence

The through-time reports by the faculties of the influence of principals and teacher groups on the classroom and on school-wide affairs are given in Table 7. The data affirm the key role of principals in matters of school-wide concern. Taking the nonunitized schools as a group, the index of principal influence on school affairs consistently held just under 4.0 over the five data-taking waves, equivalent to an estimate of "considerable influence," whereas the influence of teacher groups hovered around 3.0, equivalent to "a moderate amount." Only occasionally in the conventional school was the principal's preeminent standing challenged by teacher groups. Neither principals nor teacher groups were regarded as having much influence over the teacher's own classroom (Table 7), although the principal was seen as the more influential. When we compared the values with teacher views of their own influence on their classroom, the Index of Autonomy, a contrast was apparent: teachers viewed themselves as having the greater influence--a value of around 4.0. (Those data are not shown here.)

Turning our attention to the comparison of unitized and nonunitized schools, we see that data in Tables 7 and 8, though consistent with those of the preceding section, were inconsistent in several respects with Meyer and Cohen's results. Table 8 reports the formal school-level regression analyses. They indicate that the unit organization variable had a significant impact on teacher-group influence over classroom affairs but not on group influence over school affairs. The latter was an especially big difference in the Meyer and Cohen study. Additionally, in our study the influence of principals did not decline significantly in the unitized schools, contrary to their findings.

While none of the interaction terms in the regressions of Table 8 was significant at the .05 level, the one for principal influence on classroom

Table 7. Influence of Teacher Groups and Principal on Own Classroom and School Affairs for Unitized and Nonunitized Schools, by Wave

	Unitized (N=14)		Nonunitized (N=13)		Both (N=27)	
Wave	Mean	S.D.	Mean	S.D.	Mean	S.D.
	Influence of Teacher Groups, Own Classroom					
T1	2.77	.292	2.82	.291	2.79	.287
T2	3.00	.319	2.69	.364	2.85	.369
T3	3.01	.363	2.81	.290	2.91	.339
T4	2.88	.236	2.52	.422	2.70	.380
T5	2.79	.232	2.46	.362	2.63	.338
	Influence of Principal, Own Classroom					
T1	3.31	.332	3.20	.316	3.26	.324
T2	3.23	.256	3.18	.378	3.21	.315
T3	3.16	.244	3.14	.433	3.15	.341
T4	3.00	.269	2.99	.299	3.00	.278
T5	2.94	.352	3.03	.322	2.99	.335
	Influence of Teacher Groups, School Affairs					
T1	2.97	.246	3.15	.414	3.06	.342
T2	3.20	.374	3.02	.579	3.11	.483
T3	3.19	.380	3.02	.443	3.10	.413
T4	2.99	.248	2.90	.500	2.94	.385
T5	3.00	.288	2.82	.420	2.91	.363
	Influence of Principal, School Affairs					
T1	3.94	.301	3.91	.310	3.93	.300
T2	3.92	.312	3.88	.361	3.90	.331
T3	3.82	.312	3.88	.340	3.85	.320
T4	3.66	.350	3.78	.264	3.72	.312
T5	3.61	.321	3.82	.400	3.71	.370

Table 8. Regressions of Teacher-Group and Principal Influence at T5 on Unit Organization, T1 Values Controlled

(N = 27)

Dependent	Independent	Beta	R^2	R^2 Change	F
TGpClass T5	T1 Values	.304	.070	-	
	UnitOrg[a]	.512	.430	.260	9.32*
TGpSchl T5	T1 Values	.395	.091	-	
	UnitOrg[a]	.362	.213	.122	3.72
PrClass	T1 Values	.397	.129	-	
	UnitOrg[a]	-.205	.170	.041	1.18
PrSchl	T1 Values	.254	.056	-	
	UnitOrg[a]	-.303	.147	.091	2.57

*$p < .05$, 1/24 df.
[a]Dummy coded: Unitized = 1, Nonunitized = 0.

affairs explained an unusually large proportion of the variance in T5 values--specifically, an additional 11 percent ($F = 3.515$, 1/23 df, $p = .08$). In light of this, the T5-T1 relationship was examined separately in the unitized and nonunitized schools. In the latter, principal influence over classroom affairs at T5 was well predicted by the level measured at T1 ($r = .63$), but in the unitized schools the relationship was relatively weak ($r = .27$). Inspection of the scattergrams revealed that the level of principal influence dropped away rather dramatically in several of the unitized schools while it remained rather constant or even increased in the remainder. It would seem that implementation of the multiunit plan interrupted the "normal" governance role of principals, small as it may have been, with regard to classroom procedures.

A final point concerns the correspondence between the interview-based measures of Type C decisions and the questionnaire measures of attributions of influence to teacher groups. We found rather low within-wave correlations for the 27 schools between the mean index of teacher-group influence over classroom affairs, on the one hand, and the proportion of Type C decisions in Domains I and II, on the other. They were in the neighborhood of .30, depending on the wave, and rarely were observed above .50. Clearly, these two approaches to measuring collegiality of the school's governance system were tapping somewhat different phenomena.

Discussion

The work and governance systems of schools that sought to implement the Multiunit School model were different from their conventional comparators at the end of second year in most of the ways noted by Pellegrin and/or Meyer and Cohen. On average, greater proportions of teachers were implicated in interdependent teaching arrangements, higher percentages of decisions regarding instructional processes and student/teacher deployment were

exclusively in the hands of collegial groups, teachers attributed greater influence to teacher groups over affairs of individual classrooms, and the frequency with which teachers discussed both classroom and school matters with fellow teachers was higher in unit-organized schools than in schools that remained in the nonunitized form. It was with respect to Meyer and Cohen's measure of teacher-group influence in school affairs and their indexes of principal influence that discordant findings appeared. Whereas they had reported much greater influence of teacher groups over school-wide policies and less influence of principals (over both classroom procedures and school-wide policies) in "open" than in "self-contained" schools, our data showed no such differentials. (In one of our efforts to reconcile findings of the present study with Meyer and Cohen's, we discovered substantial differences in what were taken as "control schools" of the two studies, differences sometimes of greater magnitude than those Meyer and Cohen reported between the "open" and "self-contained" schools themselves. See Packard et al., 1978, pp. 209-215.)

Moreover, the preceding analyses have demonstrated that observed differences in attributes of the work setting at T5 were not simply preexisting ones; important amounts of the variation could be attributed to events associated with the implementation itself. Incidentally, teacher-level analyses conducted on the cohort that remained with the schools throughout the period of implementation supported the conclusions in all particulars, with two minor exceptions. Where school-level analyses merely suggested an important interaction effect associated with the principal's influence over classroom matters, the interaction was statistically significant in the teacher-level analyses--and with respect both to classroom and school affairs. The interaction was such that, in the unitized schools, there was little predictability of T5 influence levels from T1 influence;

some multiunit principals apparently were viewed as reducing their managerial and supervisory activities and others were seen as maintaining, or even increasing, their level of engagement.

While the changes in the work setting described above apply to the 14 unitized schools as a group, it was nevertheless the case that some of the schools looked little different after two years of implementation than they had before they began the effort. We suspect that one or, perhaps, two of them were ready to abandon the multiunit organization form in the following year, although we do not have evidence to document it. In short, there was considerable school-to-school variation in the extent of implementation. In addition, there is evidence that the multiunit plan was not implemented evenly across all sectors of schools. Changes often took place at certain grade levels but not at others. This could be seen best when data for the unitized schools were compiled and analyzed on a unit-by-unit basis (Charters, 1980b; Packard et al., 1978, Part III). Some of the formally instituted units never operated on more than a nominal basis and their complement of teachers continued to teach in the self-contained classroom mode throughout the period, while other units in the same schools sharply altered their management practices and teaching arrangements.

In virtually no school could changes in the work setting reasonably be called "revolutionary," even among those that carried implementation the furthest. A possible exception might be with regard to alterations in teaching arrangements. Two schools--one a 16-teacher, K-6 school in a small Virginia town and the other a 12-teacher school housing just primary grades in rural Massachusetts--moved from a predominantly self-contained classroom mode to a mode in which most teachers were implicated in a system of task interdependence. Even at that, none of the systems in them approximated <u>bona fide</u> team-teaching arrangements. Insofar as educational governance was

concerned, teacher discretion in the Instructional Process domain continued to outweigh decisions made by collegial groups in all but two schools (one the same Massachusetts school mentioned above), and in no school did respondents report colleagues as having greater influence over affairs of their own classrooms than they themselves did. Only in one maverick school was the principal regarded as having less influence over school-wide affairs than teacher groups. Most of the work-setting changes were modest, not radical.

Chapter Four

Staff Attitudes toward Work

In light of the fact that the work environments of unitized schools were clearly different on average after two years of implementing the Multiunit School model, one might expect commensurate differences in teacher work attitudes. Such were the key findings of Meyer and Cohen's and Pellegrin's cross-sectional studies. Levels of job satisfaction and of teacher autonomy (in the Meyer and Cohen study) were higher in the team-organized schools than in their comparison schools.

Comparison of Unitized and Nonunitized Schools

When we examined means on job satisfaction and teacher feelings of autonomy in the unitized and nonunitized schools, it was immediately apparent that our findings would not duplicate the findings of the antecedent studies. Levels of job-career satisfaction were virtually indistinguishable between the two sets of school, as they had been over the five data-taking waves. With respect to the two measures of autonomy, school means at T5 were lower among the unitized than the nonunitized teachers; but they had been lower at the outset, prior to implementation. There was some indication that the disparity became wider during the period, a possibility that required systematic analysis to establish.

We conducted hierarchical regression analyses paralleling those of the preceding section on both the school- and teacher-level data (Table 9). Controlling for preimplementation differences, unit organization explained statistically insignificant proportions of variance in mean work attitudes at T5 in the school-level data. However, individual-level analysis of the Meyer and Cohen Autonomy Index showed significantly lower T5 values for unitized than for nonunitized teachers after adjusting for T1 scores. A similar effect for the Sense of Autonomy scale did not meet our criterion for

Table 9. Regressions of Teacher Attitudes on Unit Organization, School- and Teacher-Level Analyses

Dependent	Independent	Beta	R^2	R^2 Change	F
		School Level (N=27)			
AutInd T5	AutInd T1	.116	.095		
	UnitOrg[a]	-.276	.170	.075	1.992
SnsAut T5	SnsAut T1	.431	.249		
	UnitOrg[a]	-.222	.294	.045	1.522
JobSat T5	JobSat T1	.504	.258		
	UnitOrg[a]	-.071	.263	.005	.69
		Teacher Level (N=230)			
AutInd T5	AutInd T1	.292	.094		
	UnitOrg[a]	-.136	.112	.018	4.674*
SnsAut T5	SnsAut T1	.532	.299		
	UnitOrg[a]	-.107	.311	.012	3.758
JobSat T5	JobSat T1	.665	.445		
	UnitOrg[a]	-.033	.446	.001	.43

*$p < .05$. 1/228 df.
[a]Dummy-coded: Unitized = 1, Nonunitized = 0.

statistical significance ($F = 3.758$, 1/229 df, $p = .054$). The cohort analysis of job-career satisfaction, like the school-level analysis, indicated that any differences between the two sets of schools were well within the bounds of chance.

Although these findings disconfirm those of Pellegrin and Meyer and Cohen regarding the salutory effects of the team-organized work environment on teacher attitudes, they give a hint of support to Meyer and Cohen's initial view that abandonment of the self-contained classroom in favor of a team approach should reduce autonomy. Considering just the individual-level data for the teacher cohort and looking only at the Autonomy Index, we found that scores declined significantly in the unitized schools.

Attitudinal Effects of Change in Work and Governance Conditions

In keeping with the second objective of the study, we examined the manner in which teacher attitudes were connected with changes in the work setting, seeking to determine if autonomy and job-career satisfaction were more closely connected with teaching arrangements of the school's technical system or with decision-making and influence processes associated with school governance.

Our method entails inspecting coefficients from multiple regressions conducted on the teacher-level data (for the greater degrees of freedom they afford), where the three attitudinal variables were regressed separately on selected work-setting variables. We calculated and used residual change scores for the analysis, based on equations predicting T5 values of the variables from their T1 values. Use of such scores preserves the through-time feature of the research design and, of course, reflects the differential changes among unitized schools on which we commented earlier.

We selected six work-setting variables as predictors in the regressions. We excluded intensity of school-related communication on

grounds of its high zero-order correlation with communication on classroom topics, and dropped the several measures of collegiality of the decision structure, since they were global attributes of schools, hence insensitive to teacher-by-teacher variations. Thus, change scores were computed for the indicator of task interdependence in teaching (TaskInt), intensity of communication on classroom-related topics (CommCl), principal and teacher-group influence over classroom and school affairs (PrClass, PrSchl, TGpClass, TGpSchl) as well as the three measures of teacher attitude--the Autonomy Index (AutInd), our Sense of Autonomy scale (SnsAut), and the measure of job-career satisfaction (JobSat)--that served as dependent variables. (Missing data at one or the other of the two measurement periods or for one or another of the variables in the regressions reduced the cohort Ns by 60 to 70 cases.)

The three regression analyses are displayed in Table 10. The multiple correlations of .383, .345, and .312 for AutInd, SnsAut, and JobSat respectively demonstrate that changes in work settings were clearly associated with changes in teacher sentiments, accounting for 10 to 15 percent of the variance of the attitude changes. Statistical significance of the Fs exceeded the .05 level in each regression.

The standardized regression coefficients in the table show, among other things, that neither feelings of work autonomy nor job-career satisfaction was affected by the measure of task interdependence. The Betas were essentially zero--or differed from zero only within the bounds of chance. Whether or not the teacher had abandoned the self-contained classroom mode made no difference in his or her attitude toward work. The main factor, indeed the only one, that appreciably affected teacher feelings of autonomy was the principal's reputed influence on the teacher's own classroom performance. This influence systematically and significantly

Table 10. Regression of Change in Teacher Attitudes on Changes in Selected Work and Governance Variables, Teacher Level

	Dependent		
	AutInd	SnsAut	JobSat
Independent	Beta	Beta	Beta
TaskInt[a]	-.05	.09	-.05
CommCl	.10	-.04	.12
TGpClass	.09	.00	-.12
PrClass	-.42*	-.36*	-.22*
TGpSchl	.11	.12	.19*
PrSchl	.14	.07	.16
R^2	.147	.119	.097
F	5.216	4.041	3.128
df	6/182	6/179	6/174
P	<.05	<.05	<.05

*Regression coefficient over twice its standard error; $p < .05$.
[a]Dummy coded: Task Interdependent = 1, Self-contained = 0.

depressed both the AutInd and SnsAut change scores of teachers. With regard to job-career satisfaction levels of teachers, not only did the principal's influence on classroom performance have a negative effect, but the influence of teacher groups on educational policy of the school had a positive and statistically significant effect as well.

There is hazard in drawing inferences from regression coefficients in analyses such as ours, except that the same conclusions have consistently arisen in other analyses that we have conducted at the teacher and school levels (Packard et al., 1978; Charters, 1980b). They point to the conclusion that teacher attitudes hinged little on the character of the school's technical system but rather on influence processes in the managerial system. Within that domain, they suggest that teacher work attitudes were a function of two opposing forces--a sentiment-reducing effect involving the principal's intrusion into the teacher's special domain of expertise and a sentiment-enhancing effect associated with the collective influence of teachers in shaping affairs of the school. As it happened, these opposing forces were not altered to favor either unitized or nonunitized schools in the schools we examined. In the Meyer and Cohen study, however, their evidence suggests that the balance of the opposing forces was systematically altered; the sentiment-reducing force of principal influence over the teacher's own instructional affairs was diminished, while the sentiment-enhancing effect of teacher-group influence on school policy was increased, with the net effect of substantially elevating teacher feelings of autonomy and job-career satisfaction.

Chapter Five

Conclusions and Implications

One of our puposes for embarking on the investigation was to learn if the results of Pellegrin's and Meyer and Cohen's exploratory studies of team-organized schools would reappear under different circumstances of team formation and when a design could be used that controlled for preimplementation differences in schools and staffs. The findings with respect to this can be quickly summarized. Compared with the nonunitized schools that served as a baseline, schools implementing the IGE/MUS plan were observed to change by the end of the second year toward: (a) greater task interdependence in teaching arrangements, (b) higher levels of work-related communication, (c) more collegiality in the schools' decision structures, and (d) greater influence of teacher groups on the teacher's own classroom performance. In these respects the findings were in accord with Pellegrin's and/or Meyer and Cohen's. However, we failed to find, as Meyer and Cohen had, an increase of teacher-group influence on school policy or evidence of decline in the principal's influence on either teaching performance or school policy (although, with respect to principal influence, our data pointed to an important interactive effect such that principals of unitized schools changed differentially, some maintaining or even increasing their centrality and a few seeming to withdraw from involvement altogether).

Our investigation produced no sign of the higher levels of autonomy and job satisfaction in team-organized schools that had been so important a finding of the antecedent research. Overall comparisons of staffs in the unitized and nonunitized schools showed that these work sentiments generally remained at their beginning levels throughout the two years or, in one test, that feelings of autonomy declined among the unitized teachers, as Meyer and Cohen had anticipated at the outset of their own study. Our further

explorations provided a partial resolution of the inconsistencies. We learned that teacher autonomy and job-career satisfaction were closely linked to conditions of the school's managerial system--conditions that had not been altered by the multiunit implementation in our study but had differed systematically in schools the Stanford group investigated. Autonomy and job satisfaction were consistently depressed in the degree that the principal exerted influence on classroom performance; teacher job satisfaction was enhanced in the degree that teacher groups were seen as having influence over educational policies of the school. Not only was principal influence lower in Meyer and Cohen's "open" as compared with "self-contained schools," but teacher influence on school policy was regularly greater. Assuming the basic processes were the same in their schools as in ours, the consequence would be precisely the higher autonomy and satisfaction levels they observed in their team-organized schools.

That feelings of autonomy and job-career satisfaction were depressed by the intensity of the principal's influence on the teacher's own classroom performance is not a startling discovery; the enervating effect of "closeness of supervision" on worker motivation is a standard finding of research into the social psychology of organizations. Though standard, it is a poignant one for principals attempting to respond to calls for "instructional leadership" and challenged to take a more active role in promoting classroom change. The path is a narrow one for principals to negotiate between the exercise of too much and too little influence; it is one of the fundamental dilemmas of leadership. In any event, the manner in which principals resolved the dilemma in the course of implementing the IGE/MUS plan had a pivotal effect on teacher attitudes.

We had been intrigued throughout our investigation by the possibility that the simple restructuring of elementary schools into subfaculties and the

creation of an additional hierarchical level (the unit leader), replacing their otherwise flat and undifferentiated organizational forms, would in itself have important consequences for teacher sentiments regarding their work, regardless of whether the subfaculties banded together for the actual conduct of instruction. As we have seen, teacher groups were formally constituted in the multiunit schools, unit faculties were explicitly charged with decision-making responsibilities, and members were furnished a time and place to meet and deliberate on their common interests and concerns. Moreover, a spokesperson for their collective interests was formally designated, and a forum (the Instructional Improvement Council) was created in which those interests could be articulated. It would not be surprising, then, to find subfaculties, or at least some of them, developing as centers of power within the school, allowing members to do collectively what they might not be able to do individually, viz., attain greater command over the resources needed for teaching, negotiate accomodations with the administrative bureaucracy on matters of concern, and perhaps even protect the individual member's right to decide for him- or herself the most suitable teaching arrangement. That so-called teaching teams serve such political functions has been observed in other studies. In a case study of differentiated staffing, for instance, Reynolds (1972) noted that groups that had been formed as teaching teams directed their energies primarily toward modifying the plans for change so vigorously promoted by the staff of the innovative program rather than toward collaborative teaching arrangements. Jones (1973) found in an elementary school installing a differentiated staffing plan that special subject teachers (of art, music, and physical education) insisted on formal recognition as a "teaching team" equal in standing to the teams that had been formed among the regular classroom teachers, not with the purpose of joint conduct of instruction but rather to

assure that their interests, too, would have representation on the faculty council.

Our evidence regarding the possibility that the structural reorganization itself was sufficient to affect teacher attitudes is far from conclusive, nor have we attempted to compile it in the present report. Some units evolved as active entities, while others appeared to be "units" in name only. Those that did emerge were not necessarily ones in which the members were tied in interdependent teaching arrangements, though occasionally they were. That teacher attitudes were not associated with the condition of task interdependence but (in the case of job-career satisfaction) with the influence exerted by teacher groups on educational policy is evidence consistent with the view that the creation of subfaculties alone could affect attitudes; but the IGE/MUS plan being implemented was a composite of structural reorganization, rearrangements in teaching forms, and curricular reforms, and it is impossible to disentangle their separate and independent components.

Our final observation is that, while the elementary schools we have investigated may have been loosely coupled in some respects, they were tightly coupled in others. Our data are replete with instances of interpenetration of the managerial and technical systems. Though the professionals had considerable latitude in conducting their internal classroom affairs, they were nevertheless regulated by and responsive to broader conditions of school governance and management. Whether schools are or are not loosely coupled systems is, in a sense, the wrong question to debate. Of greater import is to trace out, as we have attempted to do, the points of articulation in the system, thus providing a better understanding of the potential consequences of specific proposals for change.

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